What is claimed is:

1. An isolated peptide having the amino acid sequence of SEQ ID NO: 1.

2. An isolated nucleic acid encoding the peptide of claim 1.

3. A vector comprising the nucleic acid of claim 2.

4. A cell comprising the vector of claim 3.

5. A cell comprising the nucleic acid of claim 2.

6. A hepatitis C virus core polypeptide comprising an L |A substitution at amino acid position 139.

7. An isolated nucleic acid encoding the polypeptide of claim 6.

8. A vector comprising the nucleic acid of claim 7.

9. A cell comprising the vector of claim 8.

10. A cell comprising the nucleic acid of claim 7.

11. A hepatitis C virus core polypeptide having the amino acid sequence of SEQ ID NO:2.

12. An isolated nucleic acid encoding the polypeptide of claim 11.

13. A vector comprising the nucleic acid of claim 12.

14. A cell comprising the vector of claim 13.

15. A cell comprising the nucleic acid of claim 12.

16. A fragment of a hepatitis C virus core polypeptide having fewer amino acids than the entire hepatitis C virus core polypeptide, comprising the amino acid sequence of SEQ ID NO:1.

17. An isolated nucleic acid encoding the polypeptide fragment of claim 16.

18. A vector comprising the nucleic acid of claim 17.

19. A cell comprising the vector of claim 18.

20. A cell comprising the nucleic acid of claim 17.

21. A composition comprising the peptide of claim 1 and a pharmaceutically acceptable carrier.

22. A composition comprising the polypeptide of claim 6 and a pharmaceutically acceptable carrier.

23. A composition comprising the polypeptide of claim 11 and a pharmaceutically acceptable carrier.

24. A composition comprising the polypeptide fragment of claim 16 and a pharmaceutically acceptable carrier.

25. A composition comprising the nucleic acid of claim 2 and a pharmaceutically acceptable carrier.

26. A composition comprising the nucleic acid of claim 7 and a pharmaceutically acceptable carrier.

27. A composition comprising the nucleic acid of claim 12 and a pharmaceutically acceptable carrier.

28. A composition comprising the nucleic acid of claim 17 and a pharmaceutically acceptable carrier.

29. A composition comprising the vector of claim 3 and a pharmaceutically acceptable carrier.

30. A composition comprising the vector of claim 8 and a pharmaceutically acceptable carrier.

31. A composition comprising the vector of claim 13 and a pharmaceutically acceptable carrier.

32. A composition comprising the vector of claim 18 and a pharmaceutically acceptable carrier.

33. A method of producing a peptide of hepatitis C virus core polypeptide having enhanced immunogenicity comprising;

a) substituting one or more amino acids of the amino acid sequence DLMGYIPLV (SEQ ID NO:3); and

b) detecting enhanced immunogenicity of the substituted peptide as compared to the immunogenicity of a control peptide having the amino acid sequence DLMGYIPLV (SEQ ID NO:3), whereby a substituted peptide having greater immunogenicity than the control peptide is a peptide of hepatitis C virus core polypeptide having enhanced immunogenicity.

34. A method of producing an immune response in an immune cell of a subject, comprising contacting the cell with the peptide of claim 1.

35. A method of producing an immune response in an immune cell of a subject, comprising contacting the cell with the polypeptide of claim 6.

36. A method of producing an immune response in an immune cell of a subject, comprising contacting the cell with the polypeptide of claim11.

37. A method of producing an immune response in an immune cell of a subject, comprising contacting the cell with the polypeptide fragment of claim 16.

38. A method of producing an immune response in an immune cell of a subject, comprising contacting the cell with the nucleic acid of claim 2, 7, 12 or 17.

39. A method of producing an immune response in an immune cell of a subject, comprising contacting the cell with the vector of claim 3, 8, 13 or 18.

40. A method of producing an immune response in a subject, comprising administering to the subject the composition of claim 21, 22, 23 or 24.

41. A method of producing an immune response in a subject, comprising administering to the subject the composition of claim 25, 26, 27 or 28.

42. A method of producing an immune response in a subject, comprising administering to the subject the composition of claim 29, 30, 31 or 32.

43. A method of treating or preventing hepatitis C virus infection in a subject, comprising contacting an immune cell of the subject with the peptide of claim 1.

44. A method of treating or preventing hepatitis C virus infection in a subject, comprising contacting an immune cell of the subject with the polypeptide of claim 6.

45. A method of treating or preventing hepatitis C virus infection in a subject, comprising contacting an immune cell of the subject with the polypeptide of claim 11.

46. A method of treating or preventing hepatitis C virus infection in a subject, comprising contacting an immune cell of the subject with the polypeptide fragment of claim 16.

47. A method of treating or preventing hepatitis C virus infection in a subject, comprising contacting an immune cell of the subject with the nucleic acid of claim 2, 7, 12 or 17.

48. A method of treating or preventing hepatitis C virus infection in a subject, comprising contacting an immune cell of the subject with the vector of claim 3, 8, 13 or 18.

49. A method of treating or preventing hepatitis C virus infection in a subject, comprising administering to the subject the composition of claim 21, 22, 23 or 24.

50. A method of treating or preventing hepatitis C virus infection in a subject, comprising administering to the subject the composition of claim 25, 26, 27 or 28.

51. A method of treating or preventing hepatitis C virus infection in a subject, comprising administering to the subject the composition of claim 29, 30, 31 or 32.

52. A method of activating a cytotoxic T lymphocyte comprising contacting the lymphocyte with the peptide of claim 1 in the presence of a class I major histocompatibility complex molecule.

53. A method of activating a cytotoxic T lymphocyte comprising contacting the lymphocyte with the polypeptide of claim 6 in the presence of a class I major histocompatibility complex molecule.

54. A method of activating a cytotoxic T lymphocyte comprising contacting the lymphocyte with the polypeptide of claim 11 in the presence of a class I major histocompatibility complex molecule.

55. A method of activating a cytotoxic T lymphocyte comprising contacting the lymphocyte with the polypeptide fragment of claim 16 in the presence of a class I major histocompatibility complex molecule.

56. A method of activating a cytotoxic T lymphocyte comprising contacting the lymphocyte with a class I MHC-expressing cell to which the peptide of claim 1 is bound.

57. A method of activating a cytotoxic T lymphocyte comprising contacting the lymphocyte with a class I MHC-expressing cell to which the polypeptide of claim 6 is bound.

58. A method of activating a cytotoxic T lymphocyte comprising contacting the lymphocyte with a class I MHC-expressing cell to which the polypeptide of claim 11 is bound.

59. A method of activating a cytotoxic T lymphocyte comprising contacting the lymphocyte with a class I MHC-expressing cell to which the polypeptide fragment of claim 16 is bound.

60. A composition comprising cytotoxic T lymphocytes activated by contact with the peptide of claim 1 in the presence of a class I major histocompatibility complex molecule.

61. A composition comprising cytotoxic T lymphocytes activated by contact with the polypeptide of claim 6 in the presence of a class I major histocompatibility complex molecule.

62. A composition comprising cytotoxic T lymphocytes activated by contact with the polypeptide of claim 11 in the presence of a class I major histocompatibility complex molecule.

63. A composition comprising cytotoxic T lymphocytes activated by contact with the polypeptide fragment of claim 16 in the presence of a class I major histocompatibility complex molecule.

64. A method of detecting the presence of hepatitis C virus core polypeptide in a cell, comprising contacting the cell with the activated cytotoxic T lymphocytes of claims 60, 61, 62 or 63 under conditions whereby cytolysis of target cells can occur and detecting cytolysis, whereby the detection of cytolysis indicates the presence of hepatitis C virus core polypeptide in the cell.

65. A method of detecting the presence of hepatitis C virus core polypeptide in a cell, comprising contacting the cell with the activated cytotoxic T lymphocytes of claims 60, 61, 62 or 63 under conditions whereby cytokine production in the lymphocytes can occur and detecting cytokine production in the lymphocytes, whereby the detection of

cytokine production in the lymphocytes indicates the presence of hepatitis C virus core polypeptide in the cell.

66. A method of detecting hepatitis C virus in a sample comprising;

a) contacting the sample with a cell which is susceptible to infection by hepatitis C virus under conditions whereby the cell can be infected by hepatitis C virus in the sample;

b) contacting the cell of step (a) with the cytolytic T lymphocytes of claims 60, 61, 62 or 63 under conditions whereby cytolysis of target cells can occur; and

c) detecting cytolysis of target cells, whereby the detection of cytolysis of target cells indicates the presence of hepatitis C virus in the sample.

67. A method of detecting hepatitis C virus in a sample comprising:

a) contacting the sample with a cell which is susceptible to infection by hepatitis C virus under conditions whereby the cell can be infected by hepatitis C virus in the sample;

b) contacting the cell of step (a) with the cytolytic T lymphocytes of claims 60, 61, 62 or 63 under conditions whereby cytokine production can occur in the lymphocytes; and

c) detecting cytokine production in the lymphocytes, whereby the detection of cytokine production in the lymphocytes indicates the presence of hepatitis C virus in the sample.

68. A method of diagnosing hepatitis C virus infection in a subject comprising:

a) contacting cytotoxic T lymphocytes of the subject with the peptide, polypeptides or polypeptide fragment of claims 1, 6, 11 or 16 in the presence of a class I major histocompatibility complex molecule under conditions whereby cytolysis of target cells can occur; and

b) detecting cytolysis of target cells, whereby the detection of cytolysis of target cells indicates a diagnosis of hepatitis C virus infection.

69. A method of diagnosing hepatitis C virus infection in a subject comprising:

a) contacting cytotoxic T lymphocytes of the subject with the peptide, polypeptides or polypeptide fragment of claims 1, 6, 11 or 16 in the presence of a class I major

histocompatibility complex molecule under conditions whereby cytokine production in the lymphocytes can occur; and

b) detecting cytokine production in the lymphocytes, whereby the detection of cytokine production in the lymphocytes indicates a diagnosis of hepatitis C virus infection.

70. A method of determining a viral load of hepatitis C virus in a subject comprising:

a) serially diluting a biological sample from the subject which contains hepatitis C virus;

b) contacting each serially diluted sample with a cell which is susceptible to infection by hepatitis C virus under conditions whereby the cell can be infected by hepatitis C virus in the sample;

c) contacting the cell of step (b) with the cytolytic T lymphocytes of claims 60, 61, 62 or 63 under conditions whereby cytokine production can occur in the lymphocytes;

d) measuring the amount of cytokine production in the lymphocytes;

e) comparing the amount of cytokine production in the lymphocytes of step (c) with the amount of cytokine production produced by activated cytotoxic T lymphocytes contacted with cells infected with serially diluted control samples containing a known amount of hepatitis C virus; and

f) determining the viral load of hepatitis C virus in the subject from the comparison of step (e).

71. A method of determining a viral load of hepatitis C virus in a subject comprising:

a) serially diluting a biological sample from the subject which contains hepatitis C virus;

b) contacting each serially diluted sample with a cell which is susceptible to infection by hepatitis C virus under conditions whereby the cell can be infected by hepatitis C virus in the sample;

c) contacting the cell of step (b) with the cytolytic T lymphocytes of claims 60, 61, 62 or 63 under conditions whereby cytolysis of target cells can occur;

d) measuring the amount of cytolysis;

e) comparing the amount of cytolysis of step (d) with the amount of cytolysis produced by activated cytotoxic T lymphocytes contacted with cells infected with serially diluted control samples containing a known amount of hepatitis C virus; and

f) determining the viral load of hepatitis C virus in the subject from the comparison of step (e).

72. A method of determining the prognosis of a subject diagnosed with hepatitis C virus infection, comprising determining a viral load for the subject according to the method of claims 70 or 71, whereby a high viral load indicates a poor prognosis and a low viral load indicates a good prognosis.